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☐ 1. Document ID: US 6140551 A

L10: Entry 1 of 4

File: USPT

Oct 31, 2000

DOCUMENT-IDENTIFIER: US 6140551 A

TITLE: Absorbent article with visually and tactilely distinctive outer cover

Detailed Description Paragraph Right (1):

The various aspects and embodiments of the invention will be described in the context of a disposable absorbent article, such as a disposable diaper. It is, however, readily apparent that the present invention could also be employed with other articles, such as caps, gowns, shoe covers, feminine care articles, children's training pants, incontinence garments and the like. Typically, the disposable articles are intended for limited use and are not intended to be laundered or otherwise cleaned for reuse. A disposable diaper, for example, is discarded after it has become soiled by the wearer. Optionally, a disposable diaper may include a single-use, absorbent insert, and a limited-use outer cover which may be reused several times.

Detailed Description Paragraph Right (22):

For the purposes of the present description, the term "nonwoven web" means a web of fibrous material which is formed without the aid of a textile weaving or knitting process. The term "fabrics" is used to refer to all of the woven, knitted and nonwoven fibrous webs.

Detailed Description Paragraph Right (29):

The absorbent body structure 32 can comprise a matrix of hydrophilic fibers, such as a web of cellulosic fluff, mixed with particles of high-absorbency material. In particular arrangements, absorbent body 32 may comprise a mixture of superabsorbent hydrogel-forming particles and synthetic polymer meltblown fibers, or a mixture of superabsorbent particles with a fibrous coform material comprising a blend of natural fibers and/or synthetic polymer fibers. The superabsorbent particles may be substantially homogeneously mixed with the hydrophilic fibers, or may be nonuniformly mixed. For example, the concentrations of superabsorbent particles may be arranged in a non-step-wise gradient through a substantial portion of the thickness (z-direction) of the absorbent structure, with lower concentrations toward the bodyside of the absorbent body and relatively higher concentrations toward the outside of the absorbent structure. Suitable z-gradient configurations are described in U.S. Pat. No. 4,699,823 issued Oct. 13, 1987 to Kellenberger et al., the entire disclosure of which is incorporated herein by reference in a manner that is consistent (not in conflict) with the present description. Alternatively, the concentrations of superabsorbent particles may be arranged in a non-step-wise gradient, through a substantial portion of the thickness (z-direction) of the absorbent structure, with higher concentrations toward the bodyside of the absorbent body and relatively lower concentrations toward the outside of the absorbent structure. The superabsorbent particles may also be arranged in a generally discrete layer within the matrix of hydrophilic fibers. In addition, two or more different

types of superabsorbent may be selectively positioned at different locations within or along the fiber matrix.

Detailed Description Paragraph Right (48):

In the various aspects of the invention, the incorporated fibrous web, such as the outward nonwoven fabric 94, can have a Frasier Porosity value of not more than a maximum value of about 550 cubic feet of air per square foot of web area per minute (about 550 ft.<sup>3</sup> /ft.<sup>2</sup> /min. In other aspects, the Frasier Porosity value can be not less than a minimum value of about 330 ft.<sup>3</sup> /ft.<sup>2</sup> /min. In a desired arrangement, the Frasier Porosity value can be about 470 ft.<sup>3</sup> /ft.<sup>2</sup> /min to provide further improved performance. A suitable procedure for determining the Frasier Porosity values is ASTM D737: "Air Permeability of Textile Fabric".

Detailed Description Paragraph Right (90):

The ear regions 38 may be composed of a substantially non-elastomeric material, such as polymer films, woven fabrics, nonwoven fabrics or the like, as well as combinations thereof. In particular aspects of the invention, ear regions 38 may be composed of a substantially elastomeric material, such as a stretch-bonded-laminate (SBL) material, a neck-bonded-laminate (NBL) material, an elastomeric film, an elastomeric foam material, or the like, which is elastomerically stretchable at least along the lateral direction 24. For example, suitable meltblown elastomeric fibrous webs for forming ear regions 38 are described in U.S. Pat. No. 4,663,220 issued May 5, 1987 to T. Wisneski et al., the entire disclosure of which is hereby incorporated by reference. Examples of composite fabrics comprising at least one layer of nonwoven textile fabric secured to a fibrous elastic layer are described in European Patent Application EP 0 217 032 A2 published on Apr. 8, 1987 which has the listed inventors of J. Taylor et al., the entire disclosure of which is hereby incorporated by reference. Examples of NBL materials are described in U.S. Pat. No. 5,226,992 issued Jul. 13, 1993 to Mormon, the entire disclosure of which is hereby incorporated by reference.

Detailed Description Paragraph Left (8):

Code 3 was a double-embossed, 1.0 osy (34 g/m.<sup>2</sup>) spunbond-meltblown-spunbond (SMS) fabric laminate, which was composed of 9 g/m.<sup>2</sup> copolymer spunbond fibers, 16 g/m.<sup>2</sup> polypropylene meltblown fibers and 9 g/m.<sup>2</sup> copolymer spunbond fibers.

Detailed Description Paragraph Left (9):

Code 4 was a 0.8 osy (27.2 g/m.<sup>2</sup>) SMS fabric composed of 9.5 g/m.<sup>2</sup> polypropylene spunbond fibers, 8.2 g/m.<sup>2</sup> polypropylene meltblown fibers and 9.5 g/m.<sup>2</sup> polypropylene spunbond fibers.

Other Reference Publication (7):

American Society for Testing Materials (ASTM) Designation: D 737-96, "Standard Test Method for Air Permeability of Textile Fabrics," pp. 236-240, published Apr. 1996.

Other Reference Publication (10):

American Society for Testing Materials (ASTM) Designation: D 1682-64 (Reapproved 1975), "Standard Test Methods for Breaking Load and Elongation of Textile Fabrics," pp. 454-459, published Oct. 1964.

Other Reference Publication (12):

American Society for Testing Materials (ASTM) Designation: D 5034-95, "Standard Test Method For Breaking Strength And Elongation Of Textile Fabrics (Grab Test)," pp. 674-681, published Jul. 1995.

Other Reference Publication (13):

American Society for Testing Materials (ASTM) Designation: D 5035-90, "Standard Test Method For Breaking Force and Elongation of Textile Fabrics (Strip Force)," pp. 726-731, published May 1990.

Other Reference Publication (14):

American Society for Testing Materials (ASTM) Designation: D 5035-95, "Standard Test Method For Breaking Force and Elongation of Textile Fabrics (Strip Method)," pp. 682-688, published Jul. 1995.

Full	Title	Caption	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	NAME	Draw Desc	Image
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☐ 2. Document ID: US 6030373 A

L10: Entry 2 of 4

File: USPT

Feb 29, 2000

DOCUMENT-IDENTIFIER: US 6030373 A

TITLE: Multi-attachment fastening system

Detailed Description Paragraph Right (2):

Typically, disposable articles are intended for limited use and are not intended to be laundered or otherwise cleaned for reuse. For example, a disposable diaper is discarded after it has become soiled by the wearer.

Detailed Description Paragraph Right (19):

For the purposes of the present description, the term "nonwoven web" means a web of fibrous material which is formed without the aid of a textile weaving or knitting process. The term "fabrics" is used to refer to all of the woven, knitted and nonwoven fibrous webs.

Detailed Description Paragraph Right (26):

Absorbent body 26 can comprise a matrix of hydrophilic fibers, such as a web of cellulosic fluff, mixed with particles of high-absorbency material. In particular arrangements, absorbent body 26 may comprise a mixture of superabsorbent hydrogel-forming particles and synthetic polymer meltblown fibers, or a mixture of superabsorbent particles with a fibrous coform material comprising a blend of natural fibers and/or synthetic polymer fibers. The superabsorbent particles may be substantially homogeneously mixed with the hydrophilic fibers, or may be nonuniformly mixed. For example, the concentrations of superabsorbent particles may be arranged in a non-step-wise gradient through a substantial portion of the thickness (z-direction) of the absorbent structure, with lower concentrations toward the bodyside of the absorbent body and relatively higher concentrations toward the outside of the absorbent structure. Suitable z-gradient configurations are described in U.S. Pat. No. 4,699,823 issued Oct. 13, 1987 to Kellenberger et al., the entire disclosure of which is incorporated herein by reference in a manner that is consistent (not in conflict) with the present description. Alternatively, the concentrations of superabsorbent particles may be arranged in a non-step-wise gradient, through a substantial portion of the thickness (z-direction) of the absorbent structure, with higher concentrations toward the bodyside of the absorbent body and relatively lower concentrations toward the outside of the absorbent structure. The superabsorbent particles may also be arranged in a generally discrete layer within the matrix of hydrophilic fibers. In addition, two or more different types of superabsorbent may be selectively positioned at different locations within or along the fiber matrix.

Detailed Description Paragraph Right (51):

The side panels 90 may be composed of a substantially non-elastomeric material, such as polymer films, woven fabrics, nonwoven fabrics or the like, as well as combinations thereof. In particular aspects of the invention, side panels 90 are composed of a substantially elastomeric material, such as a stretch-bonded-laminate (SBL) material, a neck-bonded-laminate (NBL) material, an elastomeric film, an elastomeric foam material, or the like. For example, suitable meltblown elastomeric fibrous webs for forming side panels 90 are described in U.S. Pat. No. 4,663,220 issued May 5, 1987 to T. Wisneski et al., the entire disclosure of which is hereby incorporated by reference. Examples of composite fabrics comprising at least one layer of nonwoven textile fabric secured to a fibrous elastic layer are described in European Patent Application EP No. 0 110 010 published on Apr. 8, 1987 with the inventors listed as J. Taylor et al., the entire disclosure of which is hereby

incorporated by reference. Examples of NBL materials are described in U.S. Pat. No. 5,226,992 issued Jul. 13, 1993 to Mormon, the entire disclosure of which is hereby incorporated by reference.

Detailed Description Paragraph Right (127):

With reference to FIGS. 6 and 6A, six samples designated Code A were constructed with a fastener substrate 48 composed of a 1.7 ounce per square yard (57.8 gsm), spunbond-meltblown-spunbond (SMS) nonwoven fabric in which the component layers were bonded together with sufficient strength to withstand the testing without delamination or tearing. The SMS fabric included a 15.3 gsm polypropylene meltblown layer sandwiched between two, 21.25 gsm, polypropylene spunbond outer layers.

Detailed Description Paragraph Right (134):

With reference to FIGS. 8 and 8A, five samples designated Code C were constructed with a fastener substrate 48 composed of 1.7 ounce per square yard (57.8 gsm), spunbond-meltblown-spunbond (SMS) nonwoven fabric in which the component layers were bonded together with sufficient strength to withstand the testing without delamination or tearing. The SMS fabric included a 15.3 gsm polypropylene meltblown layer sandwiched between two, 21.25 gsm, polypropylene spunbond outer layers.

Detailed Description Paragraph Right (145):

The bonded-carded-web side of the fastener substrate 48 was bonded to a reinforcement layer 314 with a double-sided adhesive tape 316, such as 3M tape #465. The reinforcement layer was composed of 1.7 ounce per square yard (57.8 gsm), spunbond-meltblown-spunbond (SMS) nonwoven fabric in which the component layers were bonded together with sufficient strength to withstand the testing without delamination or tearing. The SMS fabric included a 15.3 gsm polypropylene meltblown layer sandwiched between two, 21.25 gsm, polypropylene spunbond outer layers. The reinforcement layer 314 was assembled to the fastener substrate 48 with a 0.125 inch (3.2 mm) overlap 318 to the proximate, inboard region of the securing means 54.

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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☐ 3. Document ID: US 5605735 A

L10: Entry 3 of 4

File: USPT

Feb 25, 1997

DOCUMENT-IDENTIFIER: US 5605735 A

TITLE: High-peel tab fastener

Detailed Description Paragraph Right (2):

Typically, disposable articles are intended for limited use and are not intended to be laundered or otherwise cleaned for reuse. For example, a disposable diaper is discarded after it has become soiled by the wearer.

Detailed Description Paragraph Right (12):

For the purposes of the present description, the term "nonwoven web" means a web of material which is formed without the aid of a textile weaving or knitting process. The term "fabrics" is used to refer to all of the woven, knitted and nonwoven fibrous webs.

Detailed Description Paragraph Right (19):

Absorbent body 26 can comprise a matrix of hydrophilic fibers, such as a web of cellulosic fluff, mixed with particles of high-absorbency material. In particular arrangements, absorbent body 26 may comprise a mixture of superabsorbent hydrogel-forming particles and synthetic polymer meltblown fibers, or a mixture of superabsorbent particles with a fibrous coform material comprising a blend of natural fibers and/or synthetic polymer fibers. The superabsorbent particles may be substantially homogeneously mixed with the hydrophilic fibers, or may be

nonuniformly mixed. For example, the concentrations of superabsorbent particles may be arranged in a non-step-wise gradient through a substantial portion of the thickness (z-direction) of the absorbent structure, with lower concentrations toward the bodyside of the absorbent body and relatively higher concentrations toward the outside of the absorbent structure. Suitable z-gradient configurations are described in U.S. Pat. No. 4,699,823, issued Oct. 13, 1987 to Kellenberger et al., the entire disclosure of which is incorporated herein by reference in a manner that is consistent (not in conflict) with the present description. Alternatively, the concentrations of superabsorbent particles may be arranged in a non-step-wise gradient, through a substantial portion of the thickness (z-direction) of the absorbent structure, with higher concentrations toward the bodyside of the absorbent body and relatively lower concentrations toward the outside of the absorbent structure. The superabsorbent particles may also be arranged in a generally discrete layer within the matrix of hydrophilic fibers. In addition, two or more different types of superabsorbent may be selectively positioned at different locations within or along the fiber matrix.

Detailed Description Paragraph Right (46):

Side panels 90 may be composed of a substantially non-elastomeric material, such as polymer films, woven fabrics, nonwoven fabrics or the like, as well as combinations thereof. In particular aspects of the invention, side panels 90 are composed of a substantially elastomeric material, such as a stretch-bonded-laminate (SBL) material, a neck-bonded-laminate (NBL) material, an elastomeric film, an elastomeric foam material, or the like. For example, suitable meltblown elastomeric fibrous webs for forming side panels 90 are described in U.S. Pat. No. 4,663,220, issued May 5, 1987 to T. Wisneski et al., the entire disclosure of which is hereby incorporated by reference. Examples of composite fabrics comprising at least one layer of nonwoven textile fabric secured to a fibrous elastic layer are described in European Patent Application EP No. 0 110 010 published on Apr. 8, 1987 with the inventors listed as J. Taylor et al., the entire disclosure of which is hereby incorporated by reference. Examples of NBL materials are described in U.S. Pat. No. 5,226,992, issued Jul. 13, 1993 to Mormon, the entire disclosure of which is hereby incorporated by reference.

Detailed Description Paragraph Right (113):

With reference to FIGS. 8 and 8A, five test samples designated Code A were each constructed with a fastener substrate 48 composed of 1.7 ounce per square yard (57.8 gsm), spunbond-meltblown-spunbond (SMS) nonwoven fabric in which the component layers were bonded together with sufficient strength to withstand the testing without delamination or tearing. The SMS fabric included a 15.3 gsm polypropylene meltblown layer sandwiched between two, 21.25 gsm, polypropylene spunbond outer layers.

Detailed Description Paragraph Right (124):

With reference to FIGS. 10 and 10A, five test samples of a fastening tab designated Code J were each constructed with a multi-component fastener substrate 48. As a result, the fastening tab sample 140 had a proximal section 49 and a distal section 45. The proximal section of the fastener substrate 48 was composed of a 1.7 ounce per square yard (57.8 gsm) spunbond-meltblown-spunbond (SMS) nonwoven fabric in which the component layers were bonded together with sufficient strength to withstand the testing without delamination or tearing. The SMS fabric included a 15.3 gsm polypropylene meltblown layer sandwiched between two, 21.25 gsm, polypropylene spunbond outer layers. The distal section of the fastener substrate was composed of a 0.7 ounce per square yard (21.7 gsm) spunbond nonwoven fabric, and the intermediate, extending flap portions of the distal and proximal sections of the fastener substrate materials were laminated together to form the gripping member 72. The securing means 54 of each test sample included a CS200 micro-hook material obtained from 3M Company, which was permanently affixed to the appointed fastening surfaces of the distal and proximal sections of the fastener substrate 48. The overall composite at the distal section of the fastener tab sample had a Gurley stiffness of about 45 mg.

☒ 4. Document ID: US 4784892 A

L10: Entry 4 of 4

File: USPT

Nov 15, 1988

DOCUMENT-IDENTIFIER: US 4784892 A

TITLE: Laminated microfiber non-woven material

Brief Summary Paragraph Right (2):

A material has been disclosed in U.S. Pat. No. 4,100,324 which comprises meltblown polymeric microfibrils intermixed with wood pulp fibres, the wood pulp fibres being interconnected by and held captive within the matrix of microfibrils by mechanical entanglement and interconnection of the microfibrils and wood pulp fibres. The wood pulp fibres may be replaceable by other suitable length fibres of cellulose material e.g. textile fibres. Absorbent or super-absorbent particles may replace the absorbent fibres or be present in addition to absorbent fibres. See also U.S. Pat. No. 4,426,417 and European Patent Application No. 0080382. Such material will hereafter be referred to as "material of the type described".

Brief Summary Paragraph Right (6):

A further example of material in accordance with the invention is that having a "top" layer of meltblown polymeric microfibrils, having intermittently mixed therewith staple textile fibres to form a soft transfer layer, a second layer of polymeric microfibrils intermittently mixed with pulp for absorbent capacity and preferably a backing polymeric film. Such a pad could be used for feminine protection articles, diapers or incontinence products.

Brief Summary Paragraph Right (9):

Such a product has the clean wiping characteristics typical of meltblown materials due to the fact that the surface layers are comprised wholly of polymeric microfibrils. The surface layers also give the product a good durability with low linting. The incorporation of the absorbent fibres or pulp in the central or core layer provides economy, high bulk and better fluid absorption and wringability characteristics as compared with wholly meltblown material.

Brief Summary Paragraph Right (16):

The first layer of wholly meltblown polypropylene microfibrils is of 15 gsm. The second or central layer consists of 50 percent by weight of polypropylene meltblown microfibrils and 50 percent wood pulp giving a layer of 55 gsm. The third or outer layer is the same as the first layer namely, 100 percent polypropylene meltblown microfibrils of 15 gsm. The material is treated with surfactant to provide water absorption properties.

Detailed Description Paragraph Right (12):

A fabric structure comprising durable nylon or polyester meltblown outer layers with a textile-like, opaque layer of staple fibres containing polypropylene microfibrils for the centre layer.

## CLAIMS:

1. A nonwoven three-layer laminate material having a basis weight in the range of from about 50 to about 150 gsm and consisting essentially of a coform central layer mixture of thermoplastic microfibers having a diameter generally in the range of up to about 10 microns including from about 50 to about 80 percent by weight of pulp fibers and said mixture also including superabsorbent particles held captive within said mixture of pulp and microfibers, and

on both sides of said central layer a meltblown surface layer consisting essentially of thermoplastic microfibers having a diameter generally within the range of from about 11/2 to 10 microns,

said laminate being interbonded by a pattern of fused bonds serving to anchor the

superabsorbent particles within said laminate, and occupying at least about 10 percent of the surface area of said laminate.

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